SHI
Sumitomo Heavy Industries

SE-HDZ

SUMITOMO ALL ELECTRIC INJECTION MOLDING MACHINE

SE-HSZ

'Zero-molding

Sumitomo Heavy Industries, Ltd.

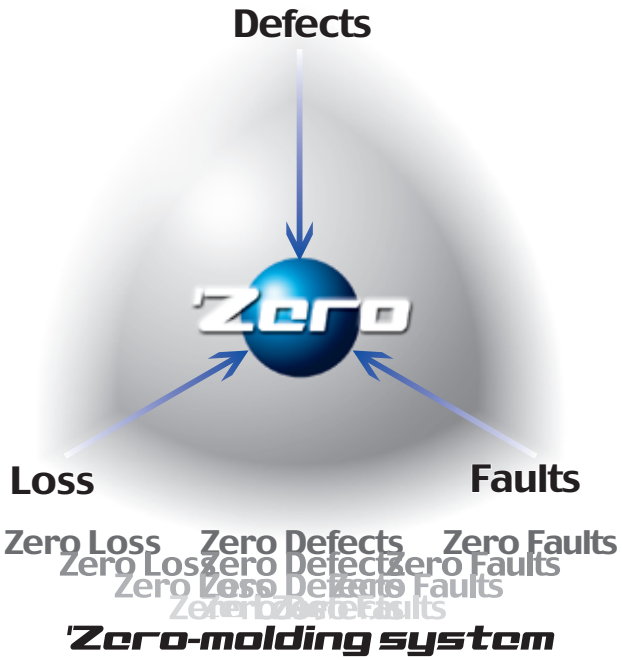
Restart from the origin.

Break & Breakthrough ··· the Zero-molding

Complicated molding made simple !

Innovative molding processes
only Sumitomo can offer.

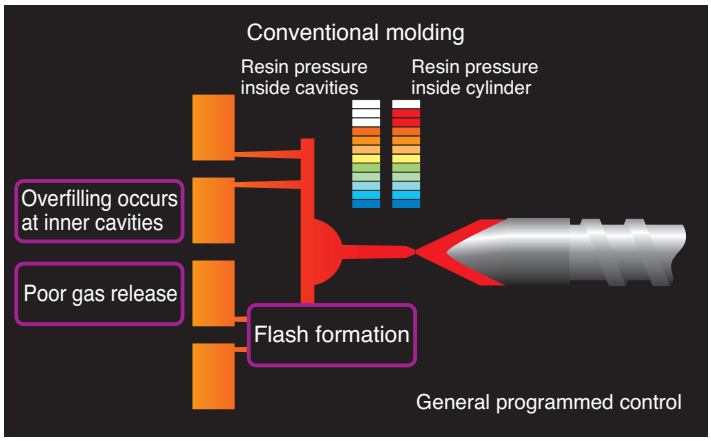
Imagine no defects, loss or faults, Zero.



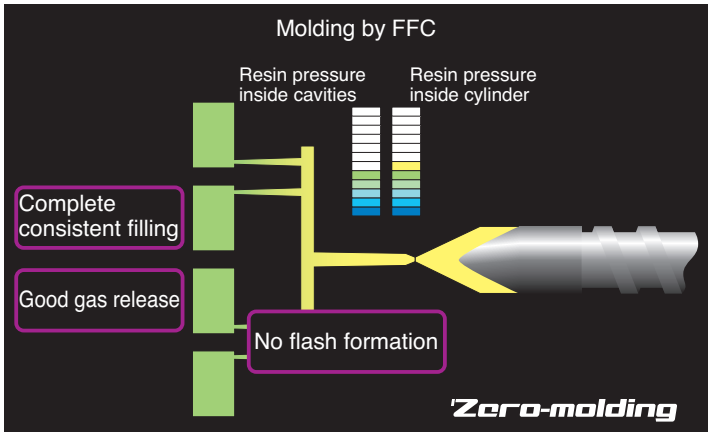
'Zero-molding by FFC (Injection system)

Patent pending | New functions

Stable molding conditions via smooth filling



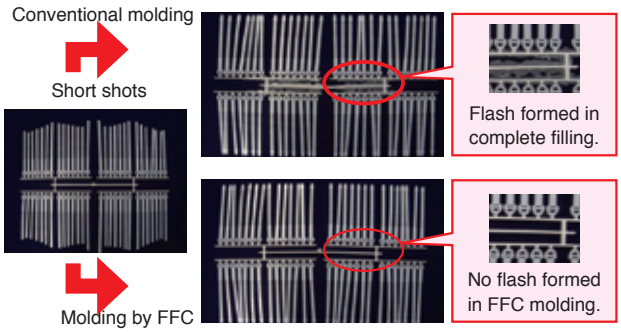
In conventional molding systems, resin is fully charged into mold cavities and consequently is apt to suffer excessive compression.



FFC is a viscoelasticity-assisted injection molding scheme where resin is not exposed to high pressures.

In FFC (Flow Front Control), screw movement is restricted by Flash Control to optimize the flow front. This enables molding at low internal pressures inside cavities, which, besides preventing flash, eliminates short shots by effectively releasing gases when filling.

Example improvement in flash



With conventional molding, flash forms because of complete filling. FFC molding offers good cavity balance, therefore complete filling can be done without raising peak pressure, hence preventing flash from forming.

Example clamping force reduction by FFC

In tests conducted by Sumitomo, a table disc was molded with a clamping force of 70 kN by FCC molding, whereas 1100 kN were required in conventional molding.

Product : Table disc
Resin : PC

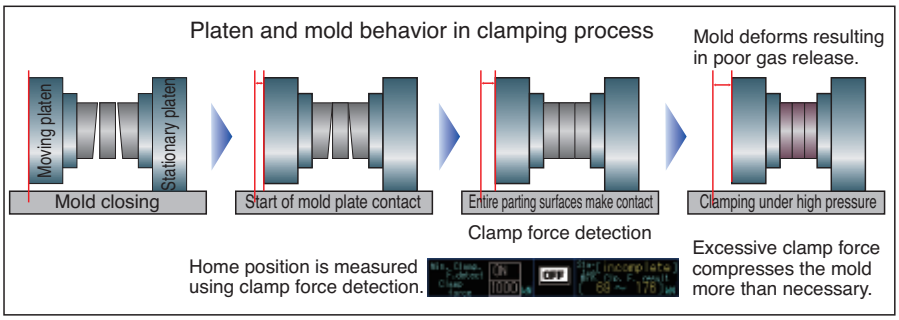
Clamp force reduced by **90%** !

'Zero-molding by MCM (Mold clamping system)

Patent pending | New functions

Low pressure clamping without unnecessary force

The SE-HDZ, SE-HSZ builds in detection capabilities for sensing the minimum force (home position) required to clamp the mold. Even with molds for the complicated profiles of heat shields, springs, sliding cores or angular pins, the clamp force required for actual molding can be set by measuring the home position, so molding is performed effectively without applying unnecessary force. Moreover, the difference in mold sitting before and after maintenance can be easily identified.



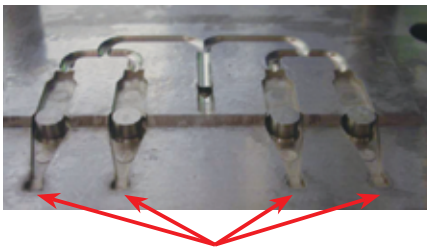
Mold comparison after 1000 shots

MCM enables molding with the detected minimum required clamp force. Gas is greatly reduced to the following benefits.

- Burning and short shots are eliminated
- Mold maintenance is required less frequently

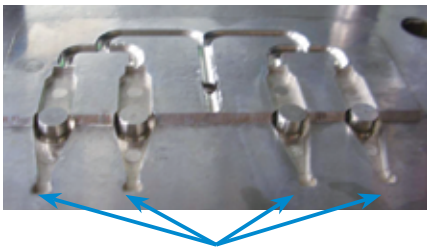
By reducing the mold clamp force, users can expect reductions in power consumption and shorter cycles, besides avoiding damage such as broken pins.

Conventional molding (Moving side)



Gas burning occurs in flow end.

Molding at low clamp force (Moving side)



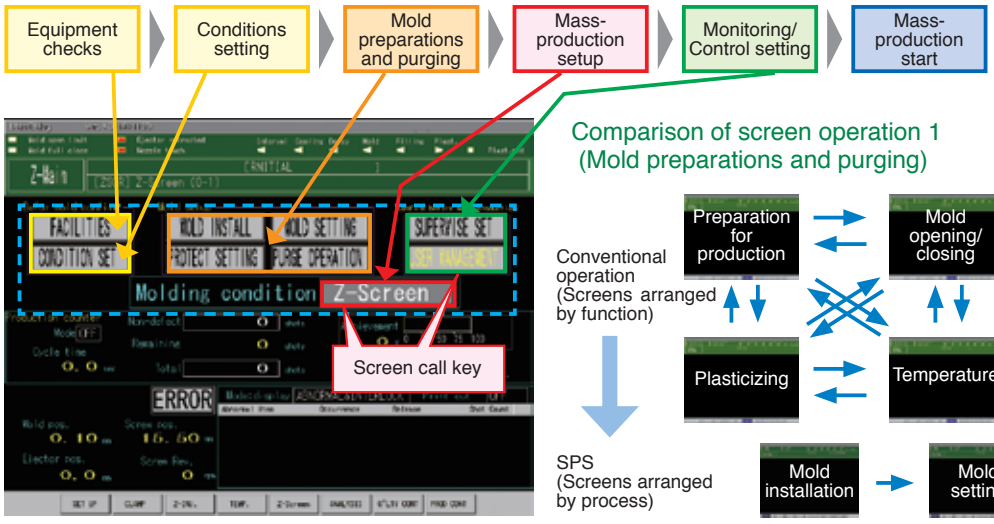
Gas burning is avoided because gas is released from entire parting surfaces.

'Zero-molding by SPS (Setting system)

Patent pending | New functions

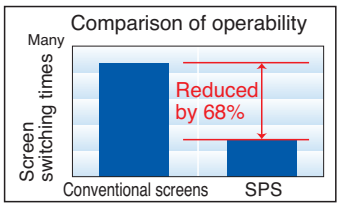
SPS simplifies operation while eliminating mistakes and oversights

Process up to mass-production start



Example of improved operability

SPS reduces screen switching for mold preparations and purging by 68%.



Whereas the conventional screens that were arranged by function required frequent switching between screens, SPS reduces operations to a minimum by arranging setting parameters according to process.

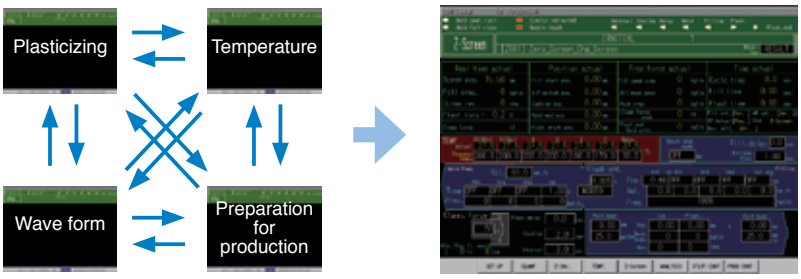
Comparison of screen operation 1 (Mold preparations and purging)

SPS (Simple Process Setting) arranges settings by process from the operator's position.

Setting screens have been created according to process operations rather than the conventional setup of functions. A series of setting operations can be completed on a single screen.

1 process ONE 1 screen ONE

Comparison of screen operation 2 (Mass-production setup)



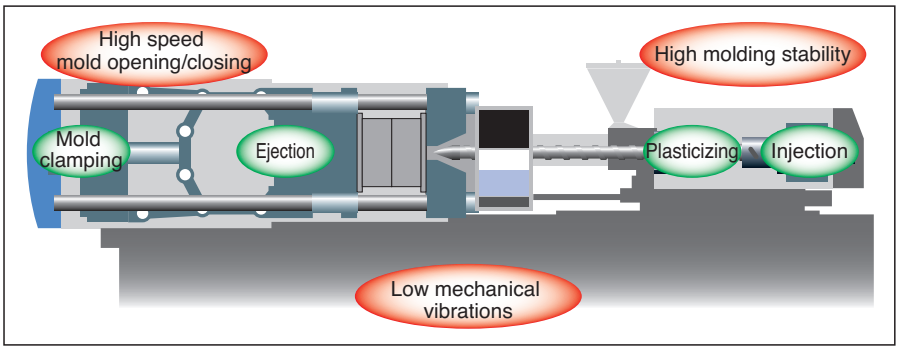
Even the fine-adjustments used in mold changeover and parameter setting for production launches with new molds can be handled with this one Z-Screen.

New ISC for improved productivity

Intelligent Servo Control System

Standard Equipment | New functions

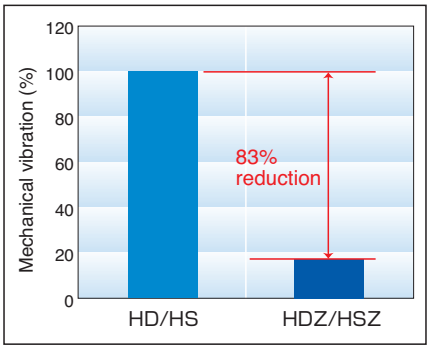
The ISC (Intelligent Servo Control) system employed by the SE-DUZ series has been newly incorporated into the SE-HDZ and SE-HSZ series. It comes standard on all drive shafts regardless of the type of drive system.
The corresponding servo control card that was newly developed for this system delivers 4 times the processing capacity of earlier cards. Moreover, a new algorithm has sped up mold opening and closing, reduced mechanical vibrations and improved molding stability.

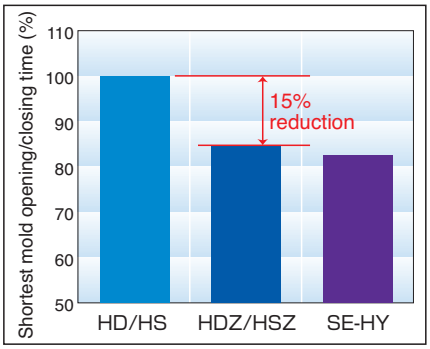


High speed, low vibrations

Standard Equipment

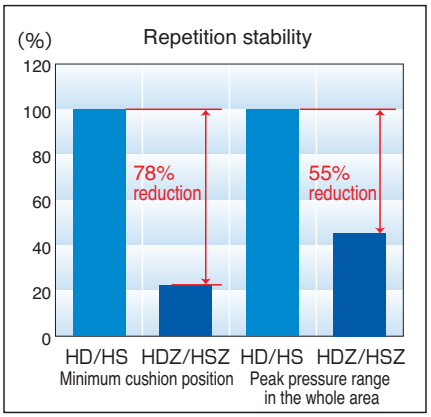
A new control algorithm reduces mechanical vibrations during mold opening and closing by 83%.
It additionally improves both mold opening/closing speed and duty by 10% over conventional systems, thus shortening the shortest mold opening/closing time by 15%. With the SE-HSZ series, the shortest mold opening/closing time can be shortened an additional 5% as an option.

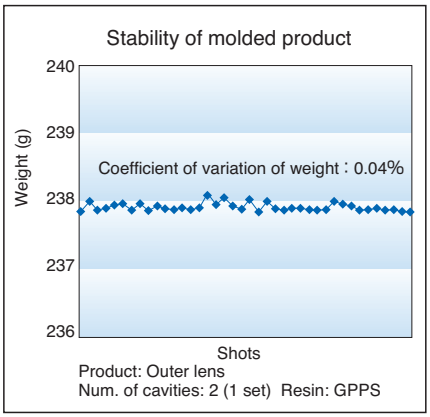




Improved molding stability

Because of the improved processing capacity in servo control, the fluctuations in cushion position and peak pressure have been minimized, which translates as improved molding stability.



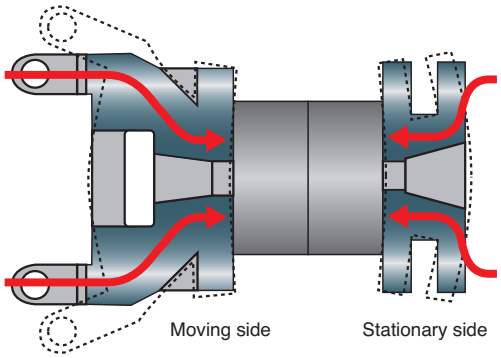


Basic configuration for delivering both capabilities and rigidity

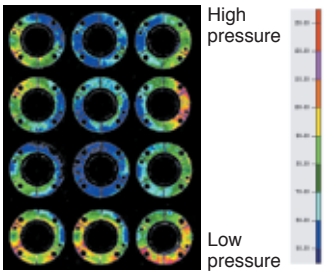
DCPP (Double Center Press Platen)

Standard Equipment

The SE-HDZ and SE-HSZ series are equipped with Center Press Platens known for their extremely low warping, on both the stationary and mobile sides. Because surface pressure on the mold is kept consistent, flash at the center and short-shots around the perimeter are eliminated at the same time. Furthermore, molding is possible with 20 ~ 30% less the clamping force of earlier machines.



Surface pressure is kept consistent

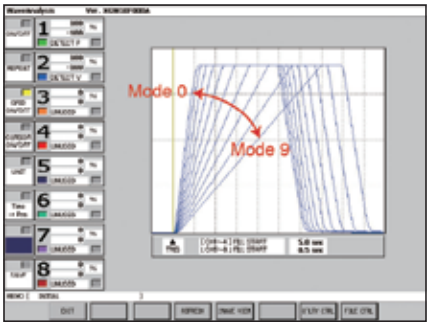


Example of surface pressure distribution (Surface pressure measurement of 12-cavity mold for container)

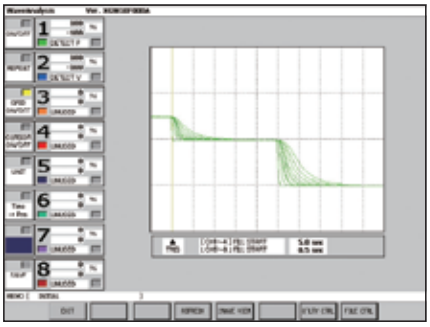
10 injection and pressure holding modes that broaden the molding conditions range for good products

Standard Equipment

The SE-HDZ and SE-HSZ series allow users to set injection speed and pressure response characteristics on 10 levels. For example, with molds that poorly release gas, filling can be matched to gas release rate by selecting the smooth injection and response of conventional hydraulic machines.



Injection10-mode



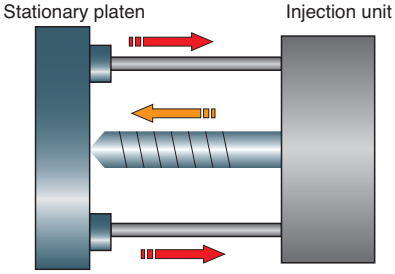
Hold pressure10-mode

High precision, high power nozzle touch and nozzle touch control

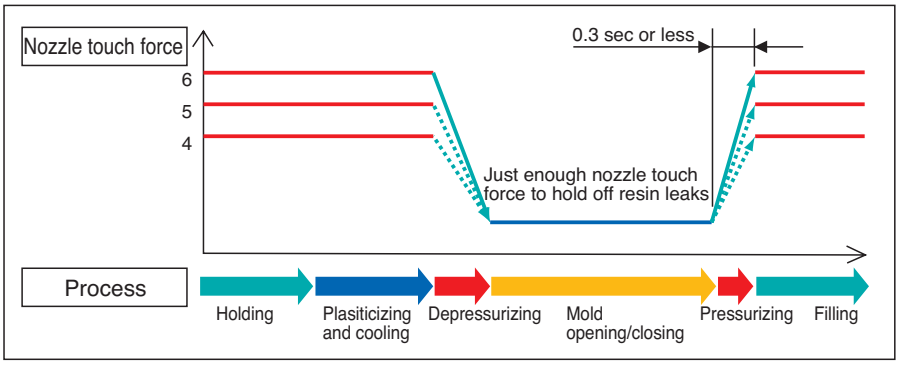
Standard Equipment

Nozzle touch force can be instantly controlled during mold opening and closing

Adopted for these series is a high precision, high power nozzle touch mechanism symmetrically that arrays the nozzles around the center. The stationary and mobile sides of the mold remain parallel without any tilting in the stationary platen.



A dual-axis system prevents the stationary platen from achieving break moment.



※The SE-HDZ and SE-HSZ series use an HST drive system as the nozzle touch device. The pump, tank and motor are bundled into a compact all-in-one unit that is housed inside the injection unit.

Offering both safety and operability

Standard Equipment

Compliant with JIMS K-1001

(Safety Standard of Japan Society of Industrial Machinery Manufacturers).

To ensure safe operation, the ejector comes standard with a brake that can keep the ejector from projecting products at the maximum force.

Maximum ejecting force vs. brake retention force

SHI ejector with a brake Ejecting force		SE220HDZ SE220HSZ	SE280HDZ SE280HSZ	SE350HDZ SE350HSZ	SE450HDZ
Max. ejecting force	tf	6.0	6.0	6.0	10.0
Breaking force	tf	6.0	6.0	6.0	10.0

SE-HDZ Heavy duty injection

Delivers high value-added molding required for high dimensional accuracy of thick-walled products, etc

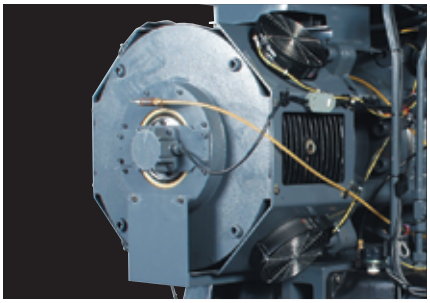
High torque injection motor that enables high pressure holding for long periods of time

Standard Equipment

The SE-HDZ series incorporates a high torque injection motor that enables extended filling and holding. It prevents flow marks and silver streaks with resins and complicated shapes that require high pressure during filling. Moreover, it is effective against whiskers with thick-walled products because the maximum injection pressure is maintained when switching to pressure holding processes. This high torque injection motor can work with a wide range of molding conditions required for large molded products.

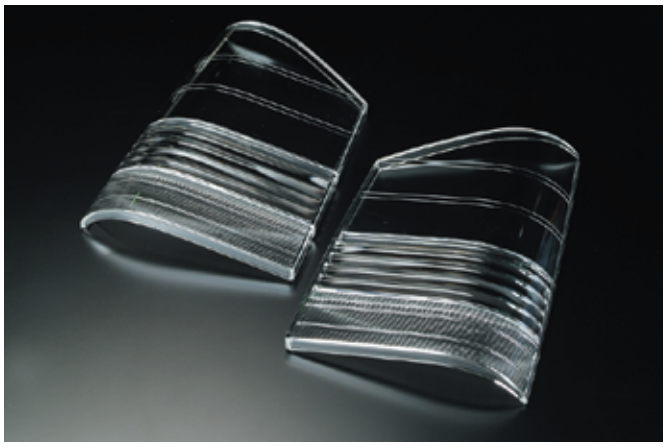
For example, molding is possible without problems under the below harsh conditions. (theoretical values)

- Retains maximum injection pressure for 5 sec. (30-sec cycle)
- Retains 75% of the maximum injection pressure for 10 sec. (30-sec cycle)
- Retains 50% of the maximum injection pressure for 60 sec. (90-sec cycle)



High torque plasticizing motor that enables extended plasticizing with high viscosity resins

Standard Equipment



The SE-HDZ series also employs a high torque motor for plasticizing that enables stable molding even with high viscosity engineering plastics, without needing to lower plasticizing speed or extend molding cycles.

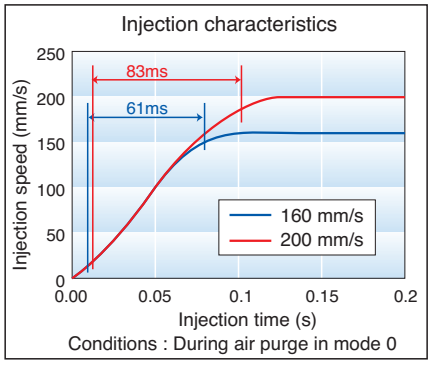
Molding is possible at - for example - the below conditions without any problems. (Example of past molding)

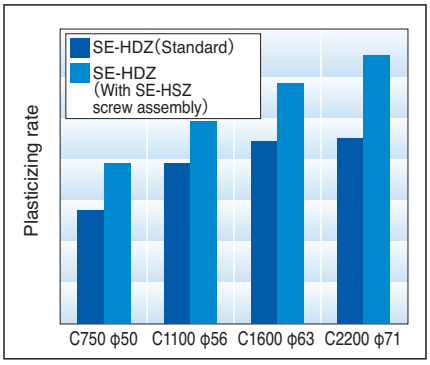
Example	Resin	Temperature	Screw rotating rate	Cycle time	Plasticizing time	Plasticizing torque
Example 1	POM	205℃	70rpm	60s	25s	60%
Example 2	PC	280℃	30 ～ 100rpm	60s	30s	35%
Example 3	PC/PBT ＋ Metal	280℃	10 ～ 50rpm	180s	45s	80%

Wider molding range owing to faster injection

Optional Equipment

The SE-HDZ series widens molding range by raising the fastest injection speed to 200 mm/sec, in addition to providing FFC molding support. Combined with the screw assembly used by the SE-HSZ series to obtain high plasticizing performance, cycles typical of the SE-HSZ series that deliver both high load injection and high cycle molding are possible.(Applicable with SE220HDZ--SE350HDZ)

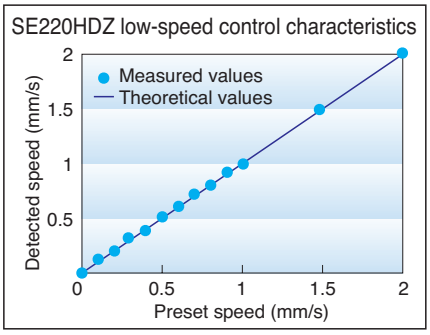




Low speed injection performance

Standard Equipment

The injection system of the SE-HDZ series delivers linear speed control characteristics even in the low speed zone. Stable quality can even be obtained with thick-walled molded products that readily invite jetting when resins pass through the gate at high speed.



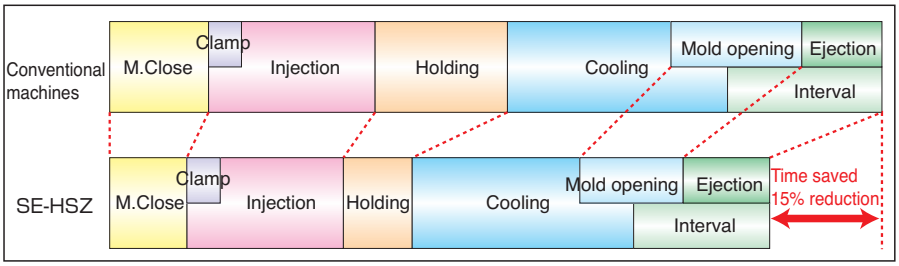
SE-HSZ High speed injection

Pursuing lower production costs via ultra-precision high speed molding of thin-walled products

Shortened cycles

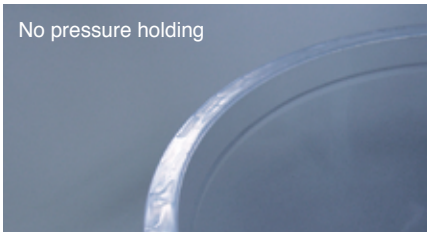
Standard Equipment

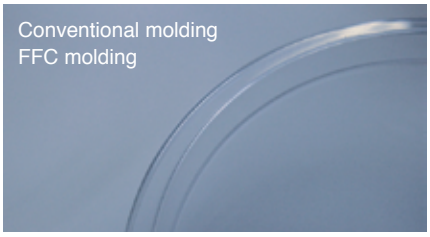
Compared to conventional machines, the maximum injection speed of the SE-HSZ series is 17% faster. Furthermore, cycle time has been shortened by about 15% because of the shorter holding times made possible by FFC molding and the shorter mold opening/closing times that result from ISC.



Example shorter pressure retention time in FFC molding

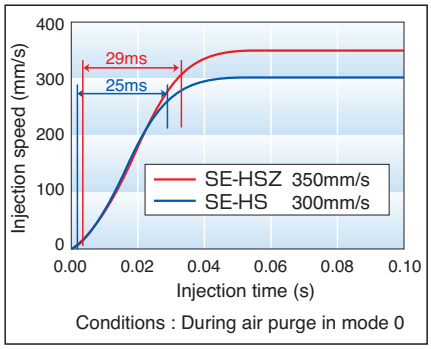
To prevent whiskers from forming, pressure had to be retained for 0.3 sec with earlier molding techniques, but FFC molding features enable good products without pressure holding. Production efficiency is greatly improved particularly in high cycle molding of thin-walled products.





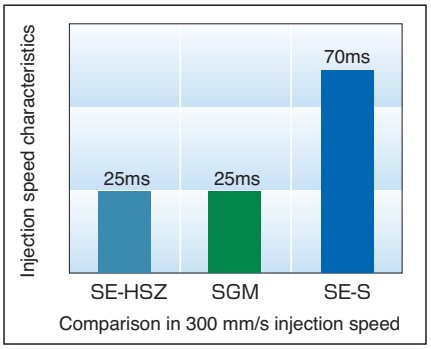
Injection characteristics

Injection speed is a standard 350 mm/sec.



Injection speed response

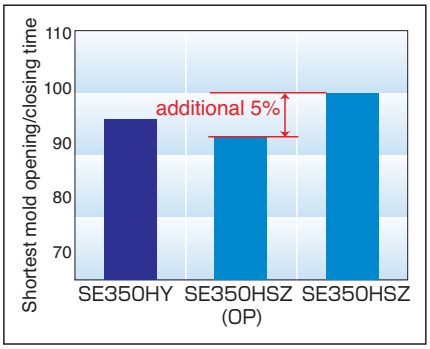
Injection speed response is about 2.5 times that of electric belt drive mechanisms and delivers the same performance as a hydraulic machine that uses servo valves with built-in accumulators.



High speed mold opening/closing

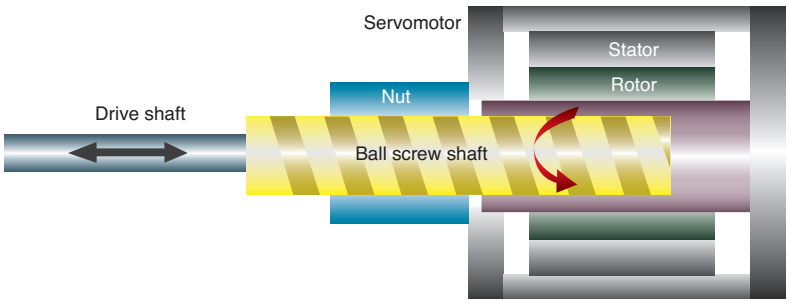
Optional Equipment

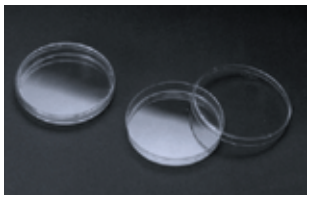
An option is available to shorten the shortest mold opening/closing time by an additional 5%. The same shortest mold opening/closing time as the SE-HY series is obtained.

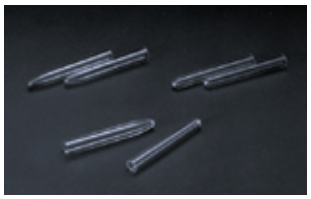


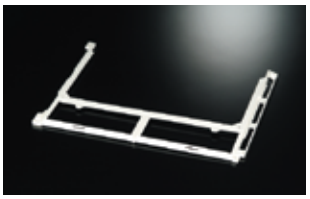
Direct drive system

The SE-HSZ series adopts Sumitomo's original direct drive mechanism of low inertia and high response for the injection system. Because it can instantly control sped and pressure, it is suited for a higher degree of precision high cycle molding. The C1250 and C1700 injection units incorporate a high-powered dual-axis synchronized direct drive mechanism that delivers high response in a compact structure.









SE-HDZ

Items		unit	SE220HDZ		SE280HDZ		SE350HDZ		SE450HDZ	
●Clamp unit										
Clamp system			Double toggle (5 point)		Double toggle (5 point)		Double toggle (5 point)		Double toggle (5 point)	
Clamp drive type			Direct drive		Direct drive		Direct drive		Belt drive	
Clamp force		kN {tf}	2150 {220}		2740 {280}		3430 {350}		4410 {450}	
Clearance between tie-bars (L×H)		mm	610×560		685×635		760×710		870×820	
Clamp platens max. (L×H)		mm	880×830		950×885		1070×1020		1244×1154	
Daylight		mm	1130		1220		1370		1600	
Mold opening stroke		mm	550		600		700		800	
Mold installation height	Min	mm	300		350		400		450	
	Max	mm	580		620		670		800	
Locating ring diameter		mm	φ120		φ150		φ150		φ150／φ200	
Ejector type			Electric (13 point)		Electric (13 point)		Electric (13 point)		Electric (17 point)	
Ejector force		kN {tf}	58 {6.0}		58 {6.0}		58 {6.0}		98 {10}	
Ejector stroke		mm	150		150		150		175	
Ejector drive type			Belt drive		Belt drive		Belt drive		Belt drive	
●Injection unit										
Plasticizing capacity			C750	C1100	C1100	C1600	C2200	C1100	C1600	C2200	C2200	C3000
Plasticizing drive type			Direct drive	Direct drive	Direct drive	Belt drive	Belt drive	Direct drive	Belt drive	Belt drive	Belt drive	Belt drive
Screw diameter			M	L	L	L	L	L	L	L	L	L
		mm	45 50	50 56	50 56	56 63	63 71	50 56	56 63	63 71	63 71	71 80
Injection pressure max.		MPa	215 174	216 172	216 172	218 172	215 169	216 172	218 172	215 169	215 169	214 168
【Note1, Note2】		{kgf/cm²}	{2200} {1780}	{2210} {1760}	{2210} {1760}	{2230} {1760}	{2200} {1730}	{2210} {1760}	{2230} {1760}	{2200} {1730}	{2200} {1730}	{2184} {1720}
Hold pressure max.		MPa	215 174	216 172	216 172	218 172	215 169	216 172	218 172	215 169	215 169	214 168
【Note1, Note2】		{kgf/cm²}	{2200} {1780}	{2210} {1760}	{2210} {1760}	{2230} {1760}	{2200} {1730}	{2210} {1760}	{2230} {1760}	{2200} {1730}	{2200} {1730}	{2184} {1720}
Theoretical injection capacity		cm³	329 406	501 628	501 628	702 888	982 1250	501 628	702 888	982 1250	982 1250	1425 1810
Max. injected mass (GPPS)		g	316 390	481 603	481 603	674 853	943 1200	481 603	674 853	943 1200	943 1200	1368 1738
		OZ	11.2 13.8	17.0 21.4	17.0 21.4	23.9 30.2	33.4 42.4	17.0 21.4	23.9 30.2	33.4 42.4	33.4 42.4	48.5 61.5
Plasticizing rate max. (GPPS) 【Note3】		kg/h	98 134	151 192	151 192	192 227	227 230	151 192	192 227	227 230	227 230	230 303
( ) Denotes screw rotation speed		(rpm)	(250) (250)	(250) (250)	(250) (250)	(250) (250)	(250) (200)	(250) (250)	(250) (250)	(250) (200)	(250) (200)	(200) (200)
Injection rate max.		cm³/s	254 314	314 394	314 394	394 499	499 633	314 394	394 499	499 633	499 633	633 804
Screw stroke		mm	207	255	255	285	315	255	285	315	315	360
Injection speed max.		mm/s	160	160	160	160	160	160	160	160	160	160
Maxmun screw rotation speed		rpm	250	250	250	250	250 200	250	250	250 200	250 200	200
Number of temperature control zone			6	6	6	6	6	6	6	6	6	6
Heater capacity		kW	12.8 13.9	21.5 23.4	21.5 23.4	23.4 31.6	31.6 33.7	21.5 23.4	23.4 31.6	31.6 33.7	31.6 33.7	33.7 37.8
Nozzle touch force		kN {tf}	58 {6.0}	58 {6.0}	58 {6.0}	58 {6.0}	58 {6.0}	58 {6.0}	58 {6.0}	58 {6.0}	58 {6.0}	58. {6.0}
Moving stroke (protrusion)		mm	430 (65)	450 (65)	450 (65)	450 (65)	450 (65)	450 (65)	450 (65)	450 (65)	520 {65)	520 (65)
Hopper capacity		ℓ	50	100	100	100	100	100	100	100	100	100
●Machine dimension & mass												
Machine dimension (L×W×H) 【Note4】		mm	6436×1580×2065	6436×1580×2254	7217×1680×2254			7511×1770×2254			8428×2070×2254	8428×2070×2257
Machine mass		t	10.1	10.9	13.0	13.7	13.8	17.2	17.9	18.1	24	25

Note1. The maximum injection pressure and hold pressure are calculated values, which are the outputs of the machine, but not the resin pressures.
Note2. The maximum injection pressure and hold pressure are no pressures that can be generated continuously.
Note3. The injection capacity is a value with the SD screw installed.
Note4. The total length of the machine is the value measured up to the advance position of the injection unit with a smallest screw installed.
Note5. The value in { } is given for reference.
Note6. Specifications subject to change without notice for performance improvement

SE-HDZ Screw assemblies

Plasticizing capacity		C750 ～ C3000				
Specification		Standard	Wear-resistant (Ⅰ)	Wear/corrosion-resistant (Ⅱ)	Wear/corrosion-resistant (Ⅲ)	Plated
Material	Screw	Ion-nitride	Wear/corrosion-resistant (Ⅱ)	Wear/corrosion-resistant (Ⅱ)	Wear/corrosion-resistant (Ⅲ)	Plated
	Heating cylinder	Wear-resistant (Ⅰ)	Wear-resistant (Ⅰ)	Wear/corrosion-resistant (Ⅱ)	Wear/corrosion-resistant (Ⅲ)	Wear-resistant (Ⅰ)
	Screw tip	STD (Rotating check ring)	Wear/corrosion-resistant (Ⅱ) (Non rotating check ring)	Wear/corrosion-resistant (Ⅱ) (Non rotating check ring)	Wear/corrosion-resistant (Ⅲ) (Non rotating check ring)	STD (Rotating check ring)
Screw type	SD screw	Standard specified	Optional	Optional	Special option	Optional
	SM screw	—	Optional	Optional	—	Optional
Applicable resin		Resin containing no ware or corrosive compound agents	Contain wear and corrosion additives less than 30%.	Contain wear and corrosion additives less than 30%.	Contain wear additive more than 30% or strong corrosion additives.	Weak for long residence time resin. Not contain wear and corrosion additives.

Screw type	Features	Resin			
		General	Engineering plastic/amorphous	Engineering plastic/crystalline	Others
		PS, PE, PP (with no GF)	AS, ABS, PMMA, PC	POM, PA, PET, PBT	GF-containing resin
SD screw	Universal screw for a variety of resins	★★	★★	★★	★★
SF screw	Screw suitable for highly mixed melting and low-temperature injection	★★★	★★	★★	★
SM screw	Screw suitable for highly mixed melting and low-shear stress	★★★	★★	★★	★

★★★ : Optimum ★★ : Excellent ★ : Good

SE-HSZ

Items		unit	SE220HSZ						SE280HSZ						SE350HSZ					
●Clamp unit																				
Clamp system			Double toggle (5 point)						Double toggle (5 point)						Double toggle (5 point)					
Clamp drive type			Direct drive						Direct drive						Direct drive					
Clamp force		kN {tf}	2150 {220}						2740 {280}						3430 {350}					
Clearance between tie-bars (L×H)		mm	610×560						685×635						760×710					
Clamp platens max. (L×H)		mm	880×830						950×885						1070×1020					
Daylight		mm	1130						1220						1370					
Mold opening stroke		mm	550						600						700					
Mold installation height	Min	mm	300						350						400					
	Max	mm	580						620						670					
Locating ring diameter		mm	φ120						φ150						φ150					
Ejector type			Electric (13 point)						Electric (13 point)						Electric (13 point)					
Ejector force		kN {tf}	58 {6.0}						58 {6.0}						58 {6.0}					
Ejector stroke		mm	150						150						150					
Ejector drive type			Belt drive						Belt drive						Belt drive					
●Injection unit																				
Plasticizing capacity			C560						C900			C900			C1250			C1250			C1700	
Plasticizing drive type			Direct drive						Direct drive			Direct drive			Direct drive			Direct drive			Direct drive	
Screw diameter			M						L			L			L			L			L	
		mm	28	32	36	40	45	50	45	50	56	45	50	56	50	56	63	50	56	63	63	71
Injection pressure max.		MPa	289	275	272	274	215	174	267	216	172	267	216	172	274	218	172	274	218	172	215	169
【Note1, Note2】		{kgf/cm²}	{2950}	{2810}	{2770}	{2800}	{2200}	{1780}	{2730}	{2210}	{1760}	{2730}	{2210}	{1760}	{2800}	{2230}	{1760}	{2800}	{2230}	{1760}	{2200}	{1730}
Hold pressure max.		MPa	289	275	272	220	172	139	267	172	173	213	172	137	219	174	137	219	174	137	172	135
【Note1, Note2】		{kgf/cm²}	{2950}	{2810}	{2770}	{2240}	{1760}	{1424}	{2730}	{1760}	{1400}	{2180}	{1760}	{1400}	{2240}	{1780}	{1400}	{2240}	{1780}	{1400}	{1760}	{1380}
Theoretical injection capacity		cm³	86	129	163	201	254	314	329	406	510	329	406	510	448	562	711	448	562	711	773	982
Max. injected mass (GPPS)		g	83	124	156	193	244	302	316	390	489	316	390	489	430	539	682	430	539	682	742	943
		OZ	2.9	4.4	5.5	6.8	8.7	10.7	11.2	13.8	17.3	11.2	13.8	17.3	15.2	19.1	24.2	15.2	19.1	24.2	26.3	33.4
Plasticizing rate max. (GPPS) 【Note3】		kg/h	37	53	76	101	136	193	149	202	246	149	202	246	202	246	290	202	246	290	290	327
( ) Denotes screw rotation speed		(rpm)	(400)	(400)	(400)	(400)	(400)	(400)	(400)	(400)	(360)	(400)	(400)	(360)	(400)	(360)	(320)	(400)	(360)	(320)	(320)	(280)
Injection rate max.		cm³/s	216	281	356	440	557	687	557	687	862	557	687	862	687	862	1091	687	862	1091	1091	1386
Screw stroke		mm	140	160	160	160	160	160	207			207			228			228			248	
Injection speed max.		mm/s	350						350			350			350			350			350	
Maxmun screw rotation speed		rpm	400						400	400	360	400	400	360	400	360	320	400	360	320	320	280
Number of temperature control zone			5						6			6			6			6			6	
Heater capacity		kW	6.6	7.6	8.5	10.4	11.1	11.3	23.3	26.8	31.2	23.3	26.8	31.2	26.8	31.2	37.1	26.8	31.2	37.1	37.1	42.7
Nozzle touch force		kN {tf}	58 {6.0}						58 {6.0}			58 {6.0}			58 {6.0}			58 {6.0}			58 {6.0}	
Moving stroke (protrusion)		mm	430 (65)						450 (65)			450 (65)			450 (65)			450 (65)			450 (65)	
Hopper capacity		ℓ	50						100			100			100			100			100	
●Machine dimension & mass																				
Machine dimension (L×W×H) 【Note4】		mm	6436×1580×2065						6436×1580×2254			7217×1680×2254			7511×1770×2254			7522×1770×2254				
Machine mass		t	10.1						10.9			13.0			13.7			17.9			18.1	

Note1. The maximum injection pressure and hold pressure are calculated values, which are the outputs of the machine, but not the resin pressures.
Note2. The maximum injection pressure and hold pressure are no pressures that can be generated continuously.
Note3. The injection capacity is a value with the SD screw installed.
Note4. The total length of the machine is the value measured up to the advance position of the injection unit with a smallest screw installed.
Note5. The value in { } is given for reference.
Note6. Specifications subject to change without notice for performance improvement

SE-HSZ Screw assemblies

Plasticizing capacity	SE-HSZ	C560				C900 ～ C1700
	SE-HDZ	C750				C1100 ～ C2200
Specification		Standard	Wear/corrosion-resistant (Ⅱ)	Wear/corrosion-resistant (Ⅲ)	Plated	Plated
Material	Screw	Ion-nitride	Wear/corrosion-resistant (Ⅱ)	Wear/corrosion-resistant (Ⅲ)	Plated	Plated
	Heating cylinder	Ion-nitride	Wear/corrosion-resistant (Ⅱ)	Wear/corrosion-resistant (Ⅲ)	Ion-nitride	Ion-nitride
	Screw tip	STD (Rotating check ring)	Wear/corrosion-resistant (Ⅱ) (Non rotating check ring)	Wear/corrosion-resistant (Ⅲ) (Non rotating check ring)	STD (Rotating check ring)	STD (Rotating check ring)
Screw type	SD screw	Standard specified	Optional	Special option	Optional	—
	SF screw	—	Optional	—	Optional	—
	SM screw	—	—	—	—	Standard specified
Applicable resin		Resin containing no ware or corrosive compound agents	Contain wear and corrosion additives less than 30%.	Contain wear additive more than 30% or strong corrosion additives.	Weak for long residence time resin. Not contain wear and corrosion additives.	Weak for long residence time resin. Not contain wear and corrosion additives.

The SE-HDZ series accepts the screw assembly for the SE-HSZ series.

SE-HDZ SE-HSZ

Zero-molding system list of new functions

1. Zero-molding Main Screen : Simple Process Setting
2. Zero-molding Main Screen : Product Molding monitor (Product count,Process, Abnormal,Detect)
3. Mold condition change (Screw dia.,Unit, Add IL display)
4. Screen for comfirm Spec.Function (STD, Option, Abnormal transaction, Peripheral device signal)
5. Minimum Clamp force detect
6. SET-UP guidance : Mold install Screen
7. SET-UP guidance : Mold condition setting
8. SET-UP guidance : Mold protection setting screen
9. SET-UP guidance : MULTI parge
10. SET-UP guidance : Reference & Call TEMP condition
11. SET-UP guidance : Supervise & warning remain resin
12. SET-UP guidance : Nozzle/Heating cylinder heated up mode (STEP/Nozzle delay)
13. SET-UP guidance : Nozzle/heating cylinder/water cooling jacket TEMP profile graphic display
14. Zero-molding : Molding condition setting screen Z-Screen (Fill.,HP, Plast.Time, TEMP, Clamp force)
15. Zero-molding : Flash mode control
16. Zero-molding : Short shot mode by Flash control
17. Decomp. by Revers after plasticizing
18. Zero-molding : Clamp force feed back
19. MULTI clamp force control (X_head pos. control)
20. Zero-molding:Molding condition guidance monitor (Peak clamp force,Pack Press.,Situation monitor)
21. Detect monitor change (Detect, detail, Detct+real time, wave, TEMP graph)
22. Protection for molding condition
23. Initial molding by auto chage (condition)
24. Protection : Screw protection
25. Wave : Display by process (IJ,HP,Plast.,Mold open,Mold close,EJ)
26. Wave : Wave preservation message
27. Quality Control : Wave distinction
28. Quality Control: Molding process monitor logging
29. Production control : Production count control (Cavity count setting)
30. Production control : Operation status control (Operation time,Motor over load monitor,Electricity consumption monitor)

Standard Equipment

Plasticizing & injection unit

1. Standard SD screw assembly (open exclusive nozzle, ion-nitride, Wear resistant type I cylinder) (Only for SE-HDZ)
2. Standard SM screw assembly (open exclusive nozzle, plated screw, ion-nitride cylinder) (unavailable for SE-HSZ C900)
   Standard SD screw assembly (open exclusive nozzle, ion-nitride) (Only for SE-HSZ C560)
3. Programming control of injection
4. Programming control hold pressure
5. Screw pull back (after screw rotating/after holding pressure)
6. Screw position digital indicator (0.01mm)
7. Step timer for hold pressure to 0.01 sec.
8. V-P switchover controller (pressure, position)
9. njection start delay timer
10. Automatic purging program Interlock attaching (Select between nozzle touch and plasticizing unit withdraw limit)
11. Heater 6 division control (ϕ45～50 (M) : 5division)
12. 2-modes temperature control (production/standby)
13. Cold screw startup protectio (Interlock variable timer attaching)
14. Injection unit retraction delay selector (with delay timer)
15. Sprue break stroke remote setting (Detection of nozzle touch, Moving time)
16. Screw speed digital indicator
17. Flow indicator for water cooling jacket
18. Protective purge shield (with limit switch)
19. Swivel injection unit (with nozzle core adjuster)
20. Remaining cooling timer indicator
21. Plasticizing start delay timer
22. Injection/Holding response 10-mode
23. Hold pressure speed setting
24. Pull back delay control
25. Flash Speed Mode
26. Temperature controlier for nozzle
27. Stepped heat-up operation
28. Energy-saving heating cylinder cover (2-layer structure)
29. Water cooling jacket temperature control device
30. High-precision, high-output nozzle touch system
31. Screw centering mechanism
32. Mold open operation during plasticizing (needle nozzle drive control)
33. Multi-step filling pressure control
34. Resin staying protection
35. Manual one-touch plasticizing

Control unit

1. 12.1 inch TFT Color LCD screen
2. Input setting device : Sheet-key and touch panel
3. Internal memory of mold conditions (200 conditions)
4. Operation guide for beginners
5. Production guide for beginners
6. Molding profiles display functions (mold profiles storage, cursor, display and so on)
7. Screen hard copy
8. Printer connection circuit
9. Take-out robot connection circuit
10. Three languages screen changeover (Japanese/English/Chinese)
11. Operation guide for maintenannce
12. Automatic starting system (heater warming, heater start, machine stop)
13. Molding process indication
14. SSR control circuit for heater bands
15. Input expressed in industrial units of velocity, position, pressure & screw revolution
16. Signal output for machine condition (5ch)
17. Automatic startup function (heater + external output signal)
18. Space II card unit (card: option)
19. PC connection circuit (RS232C)
20. Molding condition protection
21. Alarm sequence selection
22. Initial rejection + short stop rejection

Clamp unit

1. Programmed control of mold opening/closing speed (5-step/3-step)
2. Mold protection
3. Low pressure mold clamp
4. Temporary stop of mold opening/closing
5. Remote control of clamp force
6. Remote control of mold space
7. Ejector (with selective multi-functions & return check)
8. Ejector protrusion delay timer
9. Ejector remote control (speed, stroke and pressure)
10. Ejector 2-speed control
11. Interlock for ejector (In manual operation, only the mold open limit is available)
12. Ejector protrusion during mold opening
13. Ejector protrusion during mold closing
14. Ejector plate retun signal (Input signal for molding machine) Connecting by metal concent
15. Mold close and mold opening signals (Spear control signal) No-voltage dry contact
16. Valve gate drive circuit (control circuit only
17. Standby mode for mold mounting (low mold closing/opening speed)
18. Safety doors with clear PMMA windows
19. mergency stop switch (on both side)
20. Toggle covers with clear PMMA windows sides
21. Tapped hole for take-out robot installation
22. Grease central lubrication
23. Safety doors (interlocked electrically/mechanically)
24. Mold op/cl selection low vibration or high speed mode
25. Moving platen support (Sliding type)
26. Double center press platen
27. Ejected products sensor circuit
28. Multi-toggles
29. Ejector unit with brake

Monitor unit
1. Actual operating values indicator
2. Heater band burnout monitor
3. Auxiliary facility monitor (1ch)
4. Monitor (6 items)
5. Automatic setting of monitor high/low value
6. Monitor record display (item and time)
7. Statistics product quality control (Actual value control, Quality transition graph)
8. Production control
9. Automatic starting system (heater + external output signal)
10. Cylinder heater temperature monitor (all zones)
11. Self-diagnosis
12. Audible alarm
13. Shot counter
14. Molding cycle time monitor (attended/unattended selection)
15. All-in-one setting screen
16. Low fluid level monitor
17. Monitor setting fail protection
Miscellaneous
1. Automatic centralized greasing divice
2. 3-way open space frame
3. Mold cooling water block (2 lines) (Sight flow indicator & valve are optional)
4. Standard tools (nozzle ring spanner)
5. Standard spare parts (touchup paint, fuse)
6. File folder (Inside control panel)

Optional Equipment

Plasticizing selection
1. Hard chromium plating screw assembly (Only for SE-HDZ)
2. Wear resistant type Ⅰ screw assembly (Only for SE-HDZ)
3. Wear & corrosion resistant screw assembly Ⅱ & Ⅲ (Only for SE-HDZ)
4. SM screw assembly (Only for SE-HDZ)
5. SE-HSZ screw assembly
6. Needle valve nozzle (pneumatic nozzle actuating cylinder)
7. Extension nozzle
8. Cylinder nozzle
9. Zone 1 high capacity heater
Plasticizing & injection unit
1. Resin temperature finder (only for needle type with thermecou)
2. Standard type hopper
3. V/P switchover by mold cavity pressure
4. Needle valve nozzle drive circuit (pneumatic cylinder)
5. Hopper swivel mounting plate
6. Plating resin inlet of cooling water jacket
7. Assist of pneumatic of the swiveling of plasticizing unit
8. Purging saucer (Stainless steel)
9. Injection speed 200mm/s (Only for SE-HDZ)
10. Injection speed 200mm/s ＋SE-HSZ cycle (SE-HSZ screw assembly) (SE220HDZ～SE350HDZ)
11. Heater for PA (nylon) resin (Only for SE-HDZ)
Control & monitor unit
1. Leak circuit breaker (AC200V, 220V 3φ3W+E Japan and Asia only)
2. Mold temperature monitor 2 zone (without thermocouple and type K)
3. Mold temperature monitor 4 zone (without thermocouple and type K)
4. Auxiliary facility monitor (STD.+2ch)
5. Analog data output connection circuit
6. Mold temp. controller (2 zone) 3kW
7. Mold temp. controller (4 zone) 3kW
8. Automatic starting system (Heater+water supply+external output signal)
9. Revolving alarm lamp (non-operation side)
10. Revolving alarm lamp (operation side)
11. Multi fanction 3-color LED alarm lamps (non-operation side)
12. Multi fanction 3-color alarm lamps (operation side)
13. 4-Lines closed circuit water connection lines with flow indicator and stop valve, and filter for cooling water
14. 2-Lines closed circuit water connection lines with flow indicator and stop valve, and filter for cooling water
15. Electric power supply sockets (area 1 to 4 x type 1 to 4) 100A in total
16. Electric power supply socket for tools (1kWA on operation side)
17. Electric power supply socket for tools (1kWA on non-operation side)
18. Electric power supply socket for tools (1kWA on operation side + 1kW on non-operation side)
19. Key-lock switch for molding setup
20. iii-System Standard Edition
21. Main power supply for US, 460V Trans built-in
22. Motion 07

Clamp unit
1. Pneumatic ejector
2. Cavity ventilator
3. Hydraulic core pull control circuit 1 lines (control circuit+piping cnnection)
4. Hydraulic core pull control circuit 2 lines (control circuit+piping cnnection)
5. Pneumatic core pull circuit 1 lines
6. Pneumatic core pull circuit 2 lines
7. Core rotation control circuit (motor drive:1.5kw or less)
8. SPI take-out robot connection circuit
9. Heat insulating plate (10mm, cross type)
10. Mold clamp control unit
11. Auto grease lubrication selection on liner guide
12. Valve gate drive circuit (control circuit & pneumatic circuit)
13. Valve gate drive circuit (control circuit & hydraulic circuit)
14. Full metallic toggle cover
15. Hydraulic package (for core-pull & valve gate) (SE220HDZ・HSZ～SE350HDZ・HSZ : built-in type)
16. Tie-bar support
17. Tie bar plating (Hard chromium)
18. Locating ring for cooling fit I.D.φ110／O.D.φ150
19. Locating ring for cooling fit I.D.φ120／O.D.φ150
20. Automatic opening/closing of safety door (operation side)
21. Tie-bar grease adherence prevention
22. Additional frame supports
Spare parts and accessories
1. Spare parts A (Mechanical parts : Brake lining. Lub. parts)
2. Spare parts A (Electrical parts : Thermocouple)
3. Spare parts for export. (Encorder, Limit swich, and Inducjive proximity sensors)
4. Leveling pads (for one machine)
5. Anchor bolts (for one machine)
6. Locating ring (Transition fit) (I.D.φ110／O.D.φ120) (Only for SE220HDZ・HSZ)
7. Locating ring (Transition fit) (I.D.φ110／O.D.φ150) (Only for SE280HDZ・HSZ)
8. Locating ring (Transition fit) (I.D.φ120／O.D.φ150) (Only for SE280HDZ・HSZ)
9. Mechanical parts and hook for hoisting machine
10. Tools A
11. Ejector rods
12. Grease gun
13. Grease cartridge for Automatic Lub (700cc)
14. Grease cartridge for Manual Lub (400cc)
15. Plasticizing unit rotation handle (Larger than on C1250)
16. Special tool for removing Screw head set

※1 Specifications may subject to change without notice for performance improvements.
※2 The export of this product for use for or in development and/or production of massive destruction arms and weapons(nuclear weapons, biological weapons, missiles) or the export of this product to any person, party or corporation engaged or involved in the development and/or production of above described goods is subject to the authorization of the Japanese government pursuant to Foreign Exchange and Foreign Trade Control Law.

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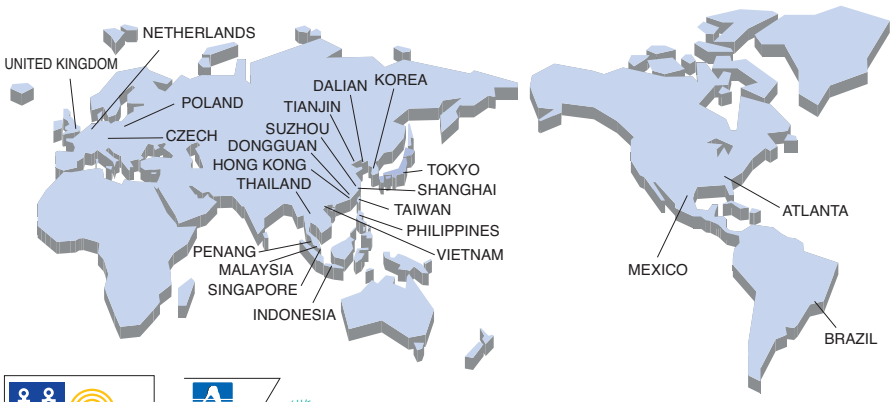

ISO 9001 REGISTERED FIRM

(We have achieved ISO 14001 at Chiba Works)

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